

# New Amazonian Taxa of *Philodendron* (Araceae)

Thomas B. Croat

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

Amisha Shah

Washington University, St. Louis, Missouri, U.S.A.

**ABSTRACT.** Two taxa of *Philodendron*, *P. asplundii* Croat & M. L. Soares and *P. heleniae* subsp. *amazonense* Croat, are described as new. Both are known only from the Amazon basin, and both are widespread taxa that until now have remained unnamed. *Philodendron asplundii* is a member of *Philodendron* subg. *Philodendron* sect. *Philodendron* and is native to French Guiana, Venezuela, Brazil, Colombia, Ecuador, and Peru. While it is highly variable in terms of blade shape, it is characterized by having cataphylls that weather into a network of fine fibers with thin patches of epidermis and blades with prominently raised cross-veins extending between the minor veins. *Philodendron heleniae* subsp. *amazonense* is a member of *Philodendron* subg. *Philodendron* sect. *Calostigma* subsect. *Oligocarpidium* and is native to Colombia, Ecuador, Peru, and Bolivia. It is characterized by its scandent habit, the moderately elongate reddish brown-drying internodes, subterete petioles, narrowly ovate, subcordate yellow-brown drying blades, and clusters of up to 5 small whitish inflorescences.

**Key words:** Amazon, Araceae, hemiepiphyte, *Philodendron*.

***Philodendron asplundii*** Croat & M. L. Soares, sp. nov. **TYPE:** Ecuador. Napo: vicinity of Baeza, on steep slopes above town of Baeza and road between Baeza and Lago Agrio (Nuevo Loja), virgin forest at edge of pastures, 2500 m, 19 Dec. 1979, T. B. Croat 49444 (holotype, MO-2737423-24; isotypes, COL, F, INPA, K, M, NY, QCA, QCNE, US). Figures 1, 2, 3.

Planta hemiepiphytica; internodiis (2)4-8 cm longis, (0.6)3.0-5.0 cm diam.; cataphyllis 21-44 cm longis; acute 2-costatis vel D-formibus, persistentibus intactis in fibras tenues lacerantibus. Folium petiolo subtereti, 17-60(100) cm longo; lamina plerumque anguste ovato-triangulari vel late ovata, interdum truncata, 17-49(68) cm longa, 7.6-36.0 cm lata. Inflorescentiae usque ad 8 in quaque axilla; pedunculo 3.0-15.5 cm longo; spatha 8.0-14.5(17.0) cm longa, tubo 3.0-5.3 cm longo, 2.0-3.6 cm diam., viridi vel pallide externe, interne interdum pallide rubro, lamina alba vel flava; spadice usque ad 13 cm longo, parte pustillata ca. 1.9-2.2 cm longa, ca. 1.4 cm diam. Ovarium 4-

ad 7-loculare; ovulis ca. 25 in quoque loculo. Baccae flavidae subaurantiacae vel viridi-albae.

Appressed-climbing hemiepiphyte to 1-3 m above ground, rarely terrestrial; stems to 1 m long; internodes short, (2)4-8 cm long, (0.6)3-5 cm diam.; cataphylls 21-44 cm long, faintly to sharply 2-ribbed to sharply D-shaped, green or green-tinged weakly with red or purple, drying brown with distinct striations, persisting intact to semi-intact and dilacerating into a net of fine fibers with mucilage (with thin patches of epidermis), epidermis brown to rusty-brown; petioles terete to obtusely flattened adaxially, 17-60(100) cm long (av. 35.7 cm), 0.54-1.69 times longer than blade (av. 1.08 times longer), 0.6-1.2 cm diam. midway, firm, semi-glossy, gray-green to medium and dark green, sometimes dark green with darker green lines; geniculum 1.3-3 cm long, sometimes slightly darker, scurfy, slightly broader than petioles; sheath short or almost absent, up to 3 cm long; leaf blades lanceolate (probably pre-adult), narrowly ovate-triangular to broadly ovate and sometimes truncate, 17-49(68) cm long (av. 40 cm), 7.6-36 cm wide (av. 19 cm), and 1.2-3.9 times longer than wide (av. 2.4 times), acuminate at apex, subcoriaceous to coriaceous, weakly glossy to glossy, dark green and matte, slightly bicolorous above, much paler and semiglossy below, anterior lobe 37-62 cm long, margins usually broadly convex, sometimes straight, occasionally concave; posterior lobes 9-20 cm long; midrib flat, slightly paler, concolorous, and broadly convex on upper surface, raised and paler on lower surface; primary lateral veins 6 to 10 per side, 8 to 20 pairs, arising at sharp angle then spreading at 45-60° angle from midrib, gently curving toward apex, sunken above, raised and darker than surface below; minor veins obscure above, distinct or rarely indistinct below; cross-veins drying distinct; basal veins 2 to 5 per side, 1st pair free to base, 2nd & 3rd pairs often coalesced 1-2 cm; posterior rib short and straight, never naked along sinus; sinus (when present) parabolic to arcuate or subhippocrateiform.



Figure 1. *Philodendron asplundii* Croat & M. L. Soares. Clockwise from top left. —Habit (Croat 49444, type). —Stem showing petioles and persistent cataphylls (Croat 49444, type). —Habit showing cluster of inflorescences with one open; leaf form with prominent sunken primary lateral veins (Croat 49605). —Leaf form with weakly sunken primary lateral veins (Croat 62327).

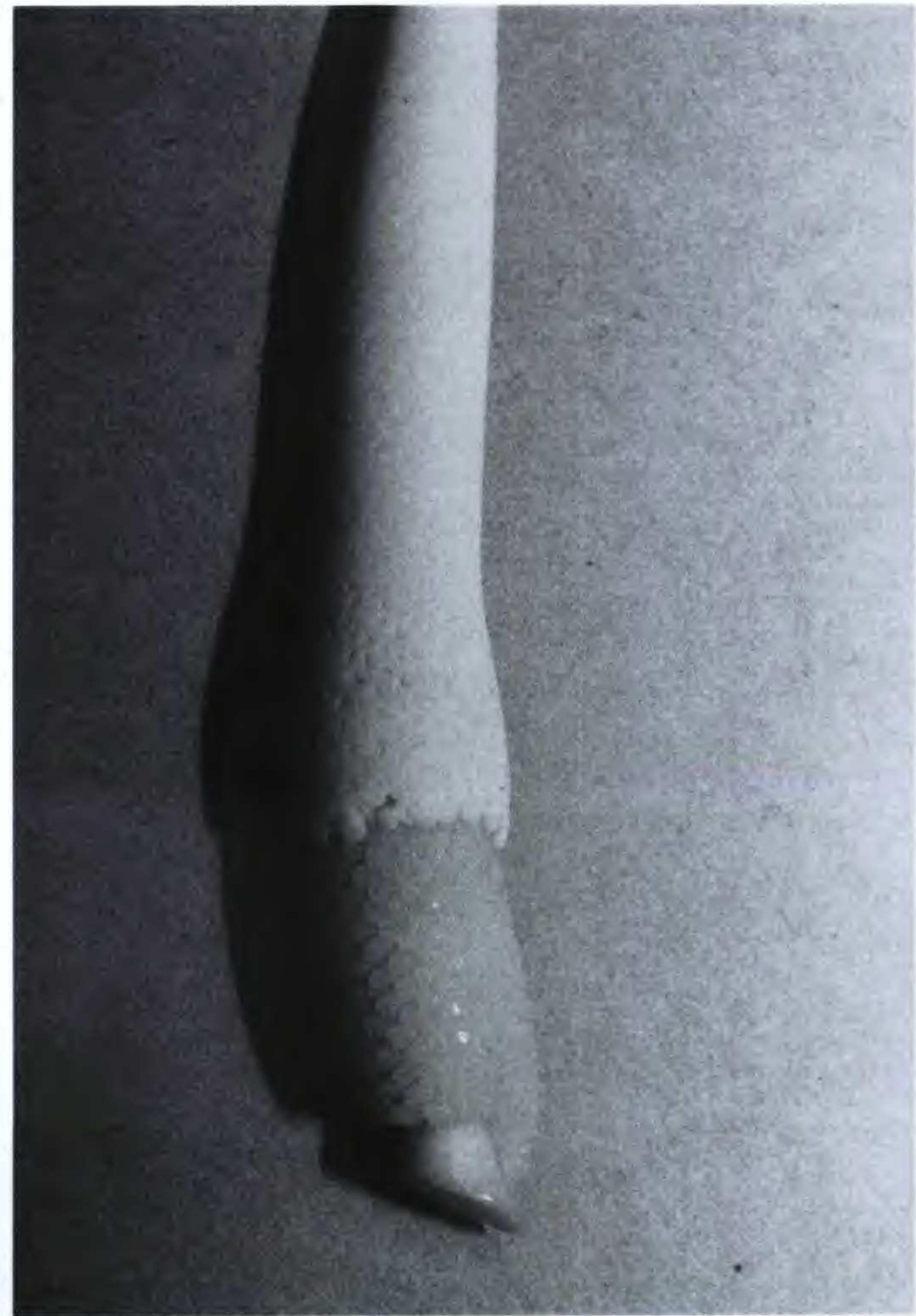


Figure 2. —Left. Petiole bases, cataphylls, and inflorescences (Croat 75398). —Right. Close-up of spadix (Croat 75398).

INFLORESCENCES up to 8 per axil; peduncles (3.0)8.0–15.5 cm long (av. 10.1 cm), 7–10 mm (drying 3–8 mm) diam., terete to weakly flattened, conspicuously striate, erect to somewhat spreading, green with paler streaks, white at base, tinged red; spathe 8–14.5(17) cm long, tapering toward apex with spathe sometimes turned upward from peduncle; spathe tube 3–5.3 cm long, 2–3.6 cm diam., green to pale green with white streaks outside, whitish to pale green or light red inside with translucent resin canals, these eventually with pale yellow resin in lower 2/3 of tube; spathe blade white to yellowish white, sometimes bent backward about midway at anthesis (Croat 49605); spadix 7.5–13 cm long, female portion 1.9–2.2 cm long, 1.2–1.4 cm diam., greenish white to white or pale yellow-green; male portion creamy-white to white, 3.5–8.5 cm long, 1 cm diam. 1 cm above base, 7 mm diam. 1 cm below tip; sterile male portion ca. 1 cm long, 1.4–1.6 cm diam.; sterile male flowers 1.75 mm long, 1.75 mm diam., fertile male flowers 1.5–2.4 mm long, 1.3–1.5 mm diam., narrowed toward base, stamens 3 to 5 per flower; pistils 1.5–3 mm long, 1–2 mm diam., 4- to 6-locular, drying dark tan; style 0.6–0.8 mm long, 1.25 mm diam.; stigma depressed-globular, 1–1.2 mm high; style irregularly

circular in outline with a central indentation and usually 4 to 6 indentations in a circle around a central pore (these corresponding to the usual number of locules), drying shield-like, ca. 2 mm diam., extending slightly over margin of ovary; locules 4 to 7 per ovary, 2.1 mm long; ovules hemi-anatropous, ca. 25 per locule, 0.4–0.5 mm long; axile placentation, biseriate: funicle 0.3–0.4 mm long. INFRUCTESCENCE with berry yellowish to orangish or greenish white, seeds 1 mm long, 0.5 mm wide, with 8 to 10 longitudinal striations (ridges), narrowing near chalazal end, drying tan.

*Philodendron asplundii* is restricted to the Amazon basin and ranges from southern Venezuela (Amazonas) and French Guiana to Brazil (Acre, Amazonas), Colombia (Putumayo, Amazonas, Caquetá), Ecuador (Sucumbíos, Napo, Pastaza, Morona-Santiago), and Peru (Amazonas, Loreto, San Martín, Huanuco, Pasco) at 150–2500 m elevation in *Tropical moist forest (T-mf)* and *Premontane wet forest (P-wf)* (apparently preferring the latter based on the number of collections). Life zone classifications are after Holdridge (1967).

*Philodendron asplundii* is a member of *Philodendron* subg. *Philodendron* sect. *Philodendron* and




Figure 3. *Philodendron asplundii*.—A. Habit. —B. Leaf. —C. Leaf blade showing details of venation. —D. Petiole in cross section. —E. Inflorescence with spathe removed in face view showing (basipetally) apical sterile portion, fertile staminate portion, sterile staminate portion, pistillate portion, stipe, spathe scar and peduncle. —F–H. Apical view of staminate flowers. —I. Face view of stamens. —J. Face view of staminoid. —L–O. Cross sections of ovaries showing 7, 4, 5, and 6 locules. —P. Longitudinal section of gynoecium. —Q. Placenta with funicles and ovules. —R. Longitudinal section of berry. —S. Seed. Drawing by M. L. C. Soares.

is highly variable in blade shape. It can be distinguished by the prominent cross-veins visible on fresh veins, which are especially noticeable upon drying, and by the sharply D-shaped to sharply 2-ribbed cataphylls, which persist as fine fibers and epidermal fragments. It is most closely related to *P. colombianum* R. E. Schultes, which differs by being terrestrial, having smaller, nearly rounded blades, a V-shaped sinus, and smaller inflorescences with shorter, more globular spathe tubes.

The species was first collected in 1929 by E. P. Killip and A. C. Smith in the Río Huallaga valley in the Loreto Department of Peru and was next collected by Eric Asplund in 1956 in Ecuador. Since existing names in *Philodendron* preclude using the names of either Killip or Smith, the species is named in honor of Eric Asplund. Asplund was one of the earliest collectors in Ecuador and was responsible for collecting many new species of Araeaceae.

One collection (Holm-Nielsen *et al.* 22723) referred to the inflorescence as being red, which seems highly unlikely for this species.

**Paratypes.** BRAZIL. **Acre:** Serra da Moa, *Prance et al.* 12163A (NY); Rio Javari, behind Palmeiras Army Post, 5°08'S, 72°49'W, *Lleras et al.* P16991 (NY); road between Cruziero do Sul and Rio Branco, 44 km E of Cruzeiro do Sul, Fazenda da Dona Cabuca, 7°38'S, 72°35'W, 150 m, *Croat* 62327 (CM, K, MEXU, MO, US). **Amazonas:** Manaus, Reserva Florestal Ducke, Área 10, campina 1, próximo ao marco 517, *Soares & Silva* 196 (INPA); Barro Branco, *Soares & Silva* 205 (INPA), *Soares et al.* 251 (INPA), *Soares et al.* 272 (INPA); extremo da Reserva, *Soares & Silva* 217 (INPA); Acará, atrás do Acampamento ca. 500 m, próximo ao Igarapé, *Soares & Silva* 228 (INPA). COLOMBIA. **Putumayo:** Macoa, along S bank of Río Macoa, 1°10'N, 76°33'W, 700 m, *Croat* 51741 (MO, COL). **Amazonas:** 7 km N of Leticia near road, 100 m, *Plowman* 2444 (F, GH, K). **Caquetá:** Florencia, 420 m, *Perez Arbelaez* 713 (US). ECUADOR. **Morona-Santiago:** road between Macas and Puyo, 31 km N of Macas, 28.5 km N of bridge over Río Upano, 2°01'S, 77°56'W, 1125 m, *Croat* 72795 (COL, HUA, MO, NY, US); road between Gualaquiza and Zamora, 5 km S of El Pangui, 4°21'S, 78°50'W, 800 m, *Croat* 50815 (JBGP, MO). **Napo:** vía Coca-Loreto-Hollín, sitio Huaticocha, 00°45'S, 77°29'W, 500 m, *Palacios et al.* 3570 (MO); Estación Biológica Jatun Sacha, Río Napo, 8 km al E de Misahualli, 1°04'S, 77°36'-37'W, 400-450 m, *Palacios* 2984 (MO), 2995 (MO), 7082 (MO, QCNE), *Palacios et al.* 4919 (MO, QCNE), *Croat* 73409 (JBGP, MO, QCNE, SEL, VDB), *Cerón* 686 (MO, QCNE), 849 (MO, QCNE), 1331 (MO, QCNE), 1972 (MO, QCNE), 3578 (MO, QCNE), *Gentry et al.* 60119 (MO); Añangu, Río Napo, 00°31'S, 76°23'W, 260 m, *Lawesson et al.* 39670 (QCA); Reserva de Producción Faunística Cuyabeno, N of Laguna Grande, 00°1'S, 76°11-12'W, 265-300 m, *Nielsen* 76338 (AAU), 76429 (AAU), 76576 (AAU), *Poulsen* 78490 (AAU), 80405 (AAU), 80730 (AAU), *Brandbyge et al.* 36138 (MO); Puerto El Carmen de Putumayo (on Río Putumayo at Colombian frontier)-Lago Agrio, vic. of Tarapoa, 76 km E of

Lago Agrio, 00°07'N, 76°23'W, 240 m, *Croat* 58628 (MO, QCA, VDB); Baeza-Lago Agrio, vic. km marker 100, 43.2 km W of Lumbaqui, 20.4 km E of Estación Bomba CEPE Saltado, 70.9 km E of Baeza turnoff, 00°07'S, 77°36'W, 1460 m, *Croat* 58726 (K, MO, QCA); 72.5 km W of Lago Agrio, 1166 m, *Croat* 49519 (MO), 49542 (CM, MO); Río Oyacachi, 00°20'S, 77°55'W, 1620 m, *Croat* 50293 (MO, OOM, W); km 154.5 W of Lago Agrio, 1730 m, *Croat* 49432 (MO), 760 m, *Croat* 49510 (MO); 39 km NE of jet. of road to Tena, 19.7 km NE of El Chaco, 141 km SW of Lago Agrio, 1750 m, *Croat* 58538 (L, MO, QCA); Canton El Chaco, margen derecha del Río Quijos, Finca "La Ave Brava" de Segundo Pacheco, 00°12'S, 77°39'W, 1800-1900 m, *Palacios* 5427 (MO); Baeza-Tena, km 68, only a few km S of Baeza, 00°30'S, 77°56'W, 2000 m, *Croat* 50495 (MO, VEN); 40 km N of Archidona, 00°41'S, 77°41'W, 2000 m, *Croat* 50522 (MO); 31.9 km N of Archidona, 1660 m, *Croat* 49605 (MO), 49610 (MO); 72 km N of Archidona, 2000 m, *Croat* 49546 (CM, MEXU, MO); Baeza, 2000 m, *Besse et al.* 1505 (SEL); Reserva Etnica Huaorani, Maxus Oil Pipeline Rd., km 116, Pozo Iro, km 4, 1°04'S, 76°12'W, 240 m, *Aulestia & Mipo* 3398 (MO, QCNE); Parque Nacional Yasuní, Maxus Oil Pipeline Rd., km 32, al sur del Río Tiputini, 00°37'S, 76°29'W, 250 m, *Aulestia* 1665 (MO, QCNE); E of Estación Científica Yasuní, 00°40'S, 76°23'W, 200-20 m, *Aulestia* 43 (AAU); 200-250 m, *Aulestia* 32 (AAU, MO); 00°40'S, 76°22'W, 230 m, *Aulestia* 209 (AAU); Río Napo, 00°28'S, 76°40'W, 250 m, *Aulestia* 1808 (COL, MO, RSA, QCNE); Yasuní, Añangu, 00°31'S, 76°23'W, 270 m, *Lutelyn et al.* 8999 (MO); Yasuní, Oil Pump Amo 2, 00°52'S, 76°05'W, 230 m, *Cerón & Coello* 3218 (MO, QCNE); 00°57'S, 76°13'W, 230 m, *Palacios* 2423 (MO, QCNE); Yasuní, 1-3 km E of Pontificia Universidad Católica del Ecuador Science Station, by Tiputini River, 00°53'S, 76°23.7'W, 240 m, *Acavedo-Rdgz. & Cedeño* 7341 (US); Coca (San Francisco de Orellana), *Croat* 75398 (MO), 78420 (MO); Coca-Río Tiguino, 85.8 km S of Coca and bridge over Río Napo, 1°10'S, 76°52'W, 300 m, *Croat* 72563 (K, KRAM, MO); Lago Agrio-Francisco de Orellana (Coca), 4.7 km N of Coca, 00°28'S, 76°58'W, *Croat* 50407 (MO); Hacienda Cotapino (Concepción), 550 m, *Harling et al.* 7126 (GB, MO); Proyecto Hidroeléctrico Coca, Punto ST4, Río Quijos, 10 km S of Reventador, 00°08'S, 77°30'W, 1450 m, *Palacios* 6056 (AAU, MO, QCNE); Punto ST3, along Río Quijos, 10 km S of Reventador, 00°11'S, 77°39'W, 1500 m, *Palacios* 5889 (MO, QCNE); creek 3.5 km NW of Borja, 00°24'S, 77°50'W, 1850 m, *Holm-Nielsen et al.* 26341 (AAU); Tena, *Harling* 3666 (S); Río Aguarico, 60 km downstream from San Pablo de Los Secoyas, 00°18'S, 76°W, 220 m, *Holm-Nielsen et al.* 21143 (AAU); Misahualli, 00°03'S, 77°35'W, 500 m, *Hammel* 15987 (MO). **Napo-Pastaza:** Vera Cruz, 900 m, *Asplund* 19427 (S). **Pastaza:** Río Curaray, 2 km W of school, 1°22'S, 76°58'W, 250 m, *Holm-Nielsen et al.* 21811 (AAU); SE of airstrip, 1°22'S, 76°57'W, 250 m, *Holm-Nielsen et al.* 22244 (AAU); Río Curaray, Valle de la Muerte, 1°25'S, 76°52'W, 240 m, *Holm-Nielsen et al.* 22498 (AAU); Río Villano, Ceiba, 1°25'S, 77°02'W, 260 m, *Holm-Nielsen et al.* 22723 (AAU); Montalvo, 0-1 km NE of military camp, 2°05'S, 76°58'W, 250 m, *Lojnant & Molau* 13350 (AAU); carretera de PETRO-CANADA, vía Auca, 115 km S of Coca, 6 km S of Río Tiguino, 1°15'S, 76°55'W, 320 m, *Zak & Rubio* 4209 (MO, QCA, QCNE); road to Tarabita and portage over Río Pastaza, 3 km from turnoff from main Puyo-Mera Road, 1000 m, *Croat* 49701 (MO). **Sucumbíos:** Lago Agrio-Puerto El Carmen de Putumayo (at Río

Putumayo on Colombian frontier), 91.7 km SE of Lago Agrio, 63.1 km SE of Dureno, 15.3 km E of Tarapoa, 00°08'S, 76°23'W, 260 m, *Croat* 58574 (G, MO, QCA); Reserva Faunistica Cuyabeno, N of Laguna Grande, 00°01'N, 76°11'W, 265 m, *Balslev et al.* 84621 (AAU, MO); Reserva Faunistica Cuyabeno S of Laguna Garzacocha, 00°01'S, 76°11'W, 265 m, *Balslev et al.* 84693 (AAU); trail to Volcán El Reventador, from km 100 on Baeza–Lago Agrio Highway, 1900 m, *Jaramillo & Grijálva* 12959 (NY); Gonzalo Pizarro Canton, campo Bermejo 6 Norte, 30 km NE of Lago Agrio, 00°14'N, 77°13'W, 1050 m, *Cerón et al.* 9335 (MO, QCNE, US). FRENCH GUIANA. Grand Saut along Armontabo River affluent to Oyapock River, *Prévost* 1906 (CAY). PERU. **Amazonas**: Bagua: Quebrada chichijam entsa, Río Cenepa, Monte, 920 m, *Ancuash* 582 (MO); 4°55'S, 78°19'W, 320 m, *Jaramillo et al.* 1164 (MO); Huambisa, Valle del Río Santiago, 65 km N de Pinglo, Quebrada Caterpiza, 2–3 km atras de la comunidad de Caterpiza, 3°50'S, 77°40'W, 200 m, *Tunqui* 297 (MO), 856 (MO), *Huashikat* 1807 (MO), 2061 (MO). **Huanuco**: Leoncio Prado, Tingo María, hills W side of Río Huallaga, 700 m, *Solomon* 3390 (MO); Distrito Rupa Rupa, Jacintillo, Río Monzón, 680–700 m, *Schunke* 10372 (CM, F, MO). **Loreto**: Alto Amazonas, Balsapuerto (lower Río Huallaga basin), 150–350 m, *Killip & Smith* 28623 (F, NY, US), 28688 (NY, US); Santa Rosa, lower Río Huallaga below Yurimaguas, 135 m, *Killip & Smith* 28815 (US), 28865 (NY); 2°55'S, 76°25'W, 180 m, *Vásquez et al.* 2981 (MO). Maynas: 14 km SW of Iquitos, *Croat* 18510 (MO); Laguna Quistacocha, 15 km, SW of Iquitos, *Solomon* 3421 (MO); Iquitos, Puerto Almendra, 3°48'S, 73°25'W, 120 m, *Croat* 51200 (MO), 51206 (MO); 120 m, *Revilla* 3555 (MO); Asociación Agraria Paujil, 4°10'S, 73°20'W, 150 m, *Vásquez & Jaramillo* 10806 (MO); Buena Suerte, (Río Itaya), *Vásquez & Jaramillo* 8419 (MO); Allpahuayo, Estación Experimental del Instituto de Investigaciones de la Amazonia Peruana, 4°10'S, 73°30'W, 150–180 m, *Vásquez & Jaramillo* 16369 (MO); Iquitos, km 44 carretera Iquitos–Nauta, terrenos del Comité de Reforestación Iquitos, 4°10'S, 73°20'W, 150 m, *Vásquez et al.* 11969 (MO, NY, USM); carretera de Zungaro Cocha, Quebrada Shushuna, 120 m, *Rimachi* 11277 (IBE); Sargento Lores, Esperanza (Río Tahuayoz), 4°10'S, 73°15'W, 120 m, *Vásquez & Jaramillo* 13246 (MO); 4 km from Mishana, Río Nanay, Estación Biológico Callicebus, 150 m, *Gentry et al.* 15829 (MO); Puerto Almendra at Río Nanay, *Croat* 18358 (MO); Dtto. Las Amazonas, Explornapo Camp Sucusari, subparcels 18–22, MacArthur Inventory, near Río Napo, 3°20'S, 72°55'W, 100–140 m, *Pipoly et al.* 13035 (MO), 13047 (MO), 13722 (MO), 14524 (MO), *Vásquez & Jaramillo* 16030 (MO); Pto. Almendras, (CIEFOR), 3°48'S, 73°25'W, 122 m, *Vásquez & Jaramillo* 6617 (MO); Dtto. Indiana, Quebrada Yanayacu, trail from Monte Carmelo to Manati, *McDaniel et al.* 21590 (IBE); Requena, Jenaro Herrera, Río Ucayali, 4°55'S, 73°45'W, *Gentry et al.* 56648 (MO); 4°50'S, 73°45'W, 170 m, *Vásquez et al.* 2066 (MO); Río Ucayali below Requena, *Gentry et al.* 21357 (F, MO, USM); 5°05'S, 73°50'W, 180 m, *Vásquez & Jaramillo* 4722 (MO). **Pasco**: Oxapampa, drainage of Río Palcuazu between km 51 and 60 of new road NW of Villa Rica toward Puerto Bermudez, 10°30'S, 75°5'W, 700 m, *Gentry & Smith* 36030 (MO); Palcazu valley, Cabeza de Mono, 5–6 km W of Iscozasin, 10°12'S, 75°14'W, 325 m, *Smith* 3742 (MO); 10°12'S, 75°15'W, 380 m, *Foster* 7929 (MO, USM); N of Iscozasin River just below native community of Alto Isco, *Salick* 6128 (MO). **San Martín**: Lamas, Alonso de Alvarado, San Juan de Pacaizapa, km

72 carretera Tarapoto–Moyobamba, 1000–1050 m, *Schunke* 9620A (CM, MO); Mariscal Cáceres, Uchiza, Azpuzana, near San Martín–Huanuco border, 500 m, *Plowman* 5936 (GH); San Martín, road from Moyobamba to Chachapoyas, km marker 447 (447 km E of Olmos), N of Rioja, Rioja–Naranjos, 5°55'S, 77°13'W, 700 m, *Croat* 58147 (MO, USM), 58154 (CM, K, MO, USM); Tarapoto–Yurimaguas, 10.6 km from junction in road to Río Huallaga, 6°30'S, 76°21'W, 530 m, *Croat* 58108 (CAS, MO, RSA, SEL, USM). VENEZUELA. **Amazonas**: upper Río Yaciba between Base Camp and White-Water affluence, 100–140 m, *Maguire et al.* 37445 (NY).

### *Philodendron heleniae* subsp. *amazonense*

*Croat*, subsp. nov. TYPE: Ecuador. Napo: Parque Nacional Yasuní, Pozo Petrolero Daimi, 00°55'S, 76°11'W, 26 May–8 June 1988, *C. E. Cerón & Hurtado* 4246 (holotype, MO–3636060; isotypes, K, QCNE, US). Figure 4.

Planta plerumque hemiepiphytica, raro terrestris; internodiis 1–7(10) cm longis, 1.0–2.5 cm diam.; cataphyllis 11–16 cm longis, acute 2-costatis, deciduis. Folium petiolo tereti vel D-formi, 8.5–29.0 cm longo, 6–8 mm diam.; lamina anguste ovata vel oblongo-elliptica, 34–55 cm longa, (16)18–25 cm lata, in secco flavidobrunnea vel viridigrisea. Inflorescentiae 1 ad 5 in quoque axilla, pedunculo 2–7.5 cm longo, 4–6 mm diam.; spatha 4–10 cm longa, viridi vel alba. Ovarium (5- ad) 6- ad 9-loculare; ovulis (1 ad) 3 vel 4 in quoque loculo.

Usually hemiepiphytic, rarely terrestrial; vining or appressed-climbing; stem appressed-climbing to somewhat scandent; internodes smooth, 1–7(10) cm long, 1.0–2.5 cm diam., as broad as long or much longer than broad, flattened on one side with sharp to blunt marginal ridges, matte, gray-green, turning brown, drying reddish brown, the epidermis smooth or irregularly folded and ridged, drying with longitudinal folds, sometimes peeling free upon drying; cataphylls 11–16 cm long, sharply 2-ribbed, green, deciduous; petioles 8.5–29.0 cm long, 6–8 mm diam., ± terete to D-shaped, obtusely flattened and weakly sulcate adaxially, firm, medium green, drying reddish brown; blades narrowly ovate to oblong-elliptic, subcoriaceous, strongly bicolorous, acuminate at apex, usually weakly and unequally subcordate, sometimes obtuse, truncate or rounded at base, 34–55 (av. 45.4) cm long, (16)18–25 (av. 19.8) cm wide, 1.8–2.8 times longer than wide (av. 2.3); upper surface dark green, semiglossy, drying smooth and yellow-brown to gray-green, lower surface much paler, weakly glossy to matte, drying yellowish to reddish brown, the secretory canals typically only visible on very young leaves; sinus broadly V-shaped to arcuate or lacking, to 1.5 cm deep when present; midrib flat to broadly convex, pale green above, bluntly acute and thicker than broad, slightly paler than surface below; basal veins lacking; primary lateral veins 6 to 10 per side, de-




Figure 4. *Philodendron heleniae* subsp. *amazonense* Croat. Clockwise from top left. —Habit (Croat 49632). —Stem close-up showing petiole bases and cataphyll scars (Croat 49632). —Leaves in face view (Croat 49632). —Stem with leaf axils and two inflorescences (Croat 58986).

parting midrib at a 40–60° angle, weakly sunken above, weakly raised and darker than surface below; minor veins weakly visible, arising from the midrib only, the surface smooth below. INFLORESCENCES 1 to 5 per axil; peduncle 2–7.5 cm long, 4–6 mm diam., green, obtusely flattened on one side; spathe greenish or white throughout, whitish on inner surface, semiglossy, cuspidate at apex, sometimes blade white and tube green, 4–10 cm long, up to 5 mm diam.; spadix sessile, slightly shorter than the spathe; pistillate portion pale green to creamy white, extending to 2/3 the length of spadix shortly after anthesis; pistils (5)6- to 9-locular; locules (1)3- to 4-ovulate; staminate portion cream to white, cylindrical or clavate. INFRACTENCE unknown.

*Philodendron heleniae* ranges from Panama to Ecuador, from 20 to about 1040(–1450) m elevation. *Philodendron heleniae* subsp. *heleniae* ranges down the Pacific slope of South America. *Philodendron heleniae* subsp. *amazonense* is endemic to the Amazon basin ranging from Ecuador (Morona-Santiago, Napo, Pastaza, Sucumbíos) to Peru and Bolivia at 200 to 1000 m elevation in *Tropical moist forest (T-mf)*, *Tropical wet forest (T-wf)*, and *Premontane wet forest (P-wf)*. It differs from *P. heleniae* subsp. *heleniae* in having generally fewer inflorescences per axil, usually white rather than reddish spathes, smooth rather than coarsely pustular lower blade surfaces, and the near lack of secretory cells in mature leaves.

*Philodendron heleniae* subsp. *amazonense* is a member of *Philodendron* subg. *Philodendron* sect. *Calostigma* subsect. *Oligocarpidium*. It is characterized by its scandent habit, the reddish brown-drying internodes much longer than broad, subterete petioles, narrowly ovate, subcordate, yellow-brown-drying blades and clusters of up to 5 small whitish inflorescences.

**Paratypes.** BOLIVIA. Cochabamba: Carrasco, Parque Nacional Carrasco, 17°23'S, 64°30'W, 525 m, Acebey 531 (LPB, MO). COLOMBIA. Amazonas: Leticia, Parque Nacional Natural Amacayacu, Quebrada de Agua Pudre, 1.5 km NE of mouth of Amacayacu River, 3°47'S, 70°15'W, 200–220 m, Pipoly 15892 (MO, NY). ECUADOR. Morona-Santiago: Plan Del Milago at crossroad between Limón and Indanza, 1600–1700 m, Harling & Andersson 24568 (GB); Pozo petrolero "Garza" del Tenneco, 35 km (approx.) N of Montalvo, 1°49'S, 76°42'W, 260 m, Zak & Espinoza 4549 (MO, QCNE). Napo: Jatun Sacha Biological Station, Río Napo, 8 km E of Misahualli, 1°04'S, 77°36'E, 450 m, Cerón 977 (COL, JAUM, MO, QCNE), 1756 (MO, QCA, QCNE), 3632 (MO, QCNE), 3742 (AAU, GB, MO, QCNE), Neill 8701 (MO, QCNE), Cerón 4567 (MO, QCNE); Parque Nacional Yasuní, La Joya de los Sachas, Maxus Oil pipeline road, km 45, 00°45'S, 76°28'W, 230 m, Dik 91 (B, MO, QCNE); Yasuní, Conoco oil pump "Daimi II," 00°09'S, 76°12'W, 240 m, Coello 318 (MO, QCNE); Yasuní, 00°55'S,

76°11'W, 200 m, Cerón & Hurtado 3854 (MO, NY, QCNE, WU); Yasuní, Pozo Amo 2, 00°52'S, 76°05'W, 230 m, Cerón 3360 (MO, QCNE); Yasuní, Alrededores del Helipuerto de Amo Sur, 00°52'S, 76°05'W, 230 m, Cerón 3422 (MO); W of Alinhuahi, Cocha, 1°02'S, 77°35'W, Bennett 4526 (MO); Tena to past Muyuna, 2 km W of Muyuna, ca 5.7 km W of Tena, 00°01'S, 77°51'W, 500 m, Croat 58860 (MO, QCA); Tena to Puyo, 58.1 km N of Puyo, 600 m, Croat 49632 (F, MO); Canton Tena, Río Blanco community, headwaters of Río Huambuno, 6 km NNW of Ahuano, 1°S, 77°40'W, 440 m, Kohn 1170 (MO, WIS); Lago Agrio to Francisco de Orellano (Coco), 15 km N of Coco, 00°30'S, 76°56'W, 450 m, Croat 50415 (MO); Limococha, 240 m, Madison et al. 5458 (SEL); Río Napo, Asplund 10248 (S). **Pastaza:** Namoyacu at Río Curaray, 1°27'S, 76°47'W, 230 m, Holm-Nielsen et al. 22315 (AAU), 22317 (AAU), 22359 (AAU, MO), 22366 (AAU); road towards Canelos, 6 km E of Puyo Macas road, 25.7 km S of Puyo, 1°34'S, 77°46'W, 800 m, Thomas & Rios 6708 (MO, NY); along road to Canelos, (departing main Puyo-Macas road at 32 km from Puyo, 22.5 km S of Veracruz) 3.8 km from turnoff, near maintainence camp, 1°37'S, 77°51'W, 850 m, Croat 58986 (MO, QCA); Canton, Arco Oil pump "Moretechocha," Río Landayacu, 75 km E of Puyo, 1°34'S, 77°25'W, 580 m, Gudiño 1160 (MO, QCNE); along road to Tarabita and portage over Río Pastaza, 3 km from turnoff from main Puyo-Mera Road, 1000 m, Croat 49682 (MO). **Sucumbíos:** Lago Agrio (Nueva Loja) to Coca (Pto. Francisco de Orellana), 26 km S of Lago Agrio, 4.6 km S of El Emo, then 2.8 km W of main Lago Agrio-Coca Road, 00°05'S, 76°54'W, 355 m, Croat 72528 (CM, MO, QCNE); Lumbaqui to Bonita, a few km N of Lumbaqui, Croat 81429. PERU. Plantación Margarita near Divisoria, 1500–1600 m, Ferreyra 1046 (MO, USM). **Amazonas:** Bagua, Cenepa, Nuevo Nazareth, near mouth of Río Imaza, on Río Maraón, 250–300 m, Tillet 671–30 (GH, MYF); Bagua, Imaza, Comunidad Aguaruna de Kusú-Litra, Cerro Apág, Quebrada Kusú, 600–700 m, Diaz et al. 8260 (MO, WU); Monte Virgen, 800 m, Comunidad de Caterpiza, Quebrada Caterpiza, Río Santiago, 200 m, Huashikat 485 (MO); Río Santiago, vic. de Caterpiza 180 m, Huashikat 760 (MO); upper Río Cenepa, Shimpunts, Kayap 409 (MO); N of Cenepa above Chikan, 600–800 ft., Berlin 1807 (MO). **Huánuco:** Pachitea, Puerto Inca, carretera marginal 14 km from a point across the Río Pachitea from Puerto Inca, 9°31'S, 74°58'W, 350 m, Smith 1302 (MO, USM); Comunidad Nativa Santa Marta (about 50 km by river from Puerto Inca) on the bank of Sungaruyacu, 9°20'S, 75°15'W, 360 m, Smith 1233 (MO). **Loreto:** Loreto, Explorama Lodge Tourist Camp, Yanamono, 3°28'S, 72°50'W, 140 m, Gentry et al. 72083 (MO); 12 km SW of Iquitos, Croat 20085 (MO). Maynas: Río Amazonas, Isla de Aguajal, ca. 2 hrs. from Tamshiyacu, 110 m, Rimachi 8775 (IBE, MO), 8813 (IBE, USM); carretera Iquitos, km 60, 4°10'S, 73°30'W, 150 m, Ruiz 1186 (MO); vicinity of Quistococha, 200 m, Gentry et al. 22296 (F, MO, NY); Sargent Lores, Constancia Norte, 4°07'04"S, 72°55'17" W, 116 m, Vasquez et al. 23430 (MO).

**Acknowledgments.** Special thanks go to Maria de Lourdes da Costa Soares Moraes from the INPA Herbarium, Manaus, coauthor of *Philodendron asplundii*, for the line drawing used for this publication, and for much of the detail provided for the description of the ovary, locules, and ovules.

#### Literature Cited

Holdridge, L. R. 1967. Life Zone Ecology. Tropical Science Center, San José, Costa Rica.